

CLAIMS:

1. A method for controlling the dissolved gas content of an aqueous liquid
5 containing a dissolved gas, comprising
 - (a) providing a microporous hydrophobic hollow fibre membrane, to provide at
equilibrium a stable interface between an aqueous liquid phase containing
dissolved gas on one side of the membrane and a gaseous phase on the other
10 side of the membrane,
 - (b) controlling the aqueous phase and gaseous phase pressures, such that in
operation the gaseous phase pressure is up to but not exceeding the aqueous
phase pressure, and
 - (c) flowing the gaseous and liquid phases across the membrane, to provide
15 simultaneous mass transfer through the membrane of a first gas in the gaseous
phase into the liquid phase and of a second gas dissolved in the aqueous
liquid into the gaseous phase, to provide simultaneous mass transfer through
the membrane of a first gas in the gaseous phase into the liquid phase, and of a
second gas dissolved in the aqueous liquid into the gaseous phase, whereby
20 the gas content of the first gas in the aqueous phase is increased, the gas
content of the second gas in the gaseous phase is decreased and the total
dissolved gas pressure(TG) of the aqueous phase is altered.
2. The method of Claim 1, wherein step (c) the gaseous and liquid phases are
25 flowed in substantially countercurrent manner.
3. The method of Claim 2, wherein the total dissolved gas pressure(TG), is
decreased.

4. The method of any of the preceding Claims, wherein G is the flow rate of the first gas in g/time unit, and L is the flow rate of the aqueous phase in l/time unit, and wherein the G/L ratio is varied.
- 5 5. The method of any of the preceding Claims, wherein the aqueous liquid is water, the first gas is oxygen and the second gas is nitrogen, carbon dioxide, ammonia or a mixture thereof.
6. The method of Claim 5, wherein the second gas is nitrogen.
- 10 7. The method of any of the preceding Claims, wherein the gaseous phase is on the inside of the hollow fibre membrane, and the aqueous phase is on the outside of the membrane.
- 15 8. The method of any of the preceding Claims, wherein the mass transfer of the first gas from the gaseous phase into the aqueous phase occurs by absorption, and the mass transfer of the second gas from the aqueous phase into the gaseous phase occurs by stripping.
- 20 9. An apparatus for controlling the dissolved gas content of an aqueous liquid containing dissolved gas, comprising
- 25 a microporous hydrophobic hollow fibre membrane, to provide at equilibrium a stable interface between an aqueous liquid phase containing dissolved gas on a first side of the membrane and a gaseous phase on an opposite side of the membrane,
- means providing aqueous liquid phase and gaseous phase flow paths on opposite sides of the membrane,
- 30 means for supplying an aqueous liquid phase containing dissolved gas to the first side of the membrane,

- means for controlling the flow feed rate of the aqueous liquid phase,
- means for controlling the aqueous liquid phase inlet pressure,
- 5 means for supplying a gaseous phase to the other side of the membrane,
- means for controlling the gaseous phase inlet pressure,
- 10 means for removing gaseous phase from the apparatus, and
- means for removing aqueous phase from the apparatus, wherein the aqueous phase and the gaseous phase pressures are controlled such that the gaseous phase pressure is up to but not exceeding the aqueous phase pressure, such that in operation
- 15 the simultaneous mass transfer through the membrane of a first gas in the gaseous phase into the liquid phase and of a second gas dissolved in the aqueous liquid into the gaseous phase occurs, whereby the gas content of the first gas in the aqueous phase is increased, the gas content of the second gas in the gaseous phase is decreased and the total gas pressure(TG) of the aqueous phase is altered.
- 20
10. The apparatus of Claim 9, the aqueous liquid phase and gaseous phase flow paths are substantially countercurrent.
11. The apparatus of Claim 9 or 10, wherein the aqueous liquid is water, the first
- 25 gas is oxygen and the second gas is nitrogen, carbon dioxide, ammonia or a mixture thereof.
12. The method of Claim 11, wherein the second gas is nitrogen.

13. The method of Claim 9, 10, 11 or 12, wherein the gaseous phase is on the inside of the hollow fibre membrane, and the aqueous phase is on the outside of the membrane.
- 5 14. The method of Claim 9, 10, 11, 12 or 13, wherein the total dissolved gas pressure(TG), is decreased.